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Mussurana montana (Franco, Marques & Puorto, 1997) (Serpentes: Dipsadidae): noteworthy records and an updated distribution map

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Abstract: *Mussurana montana* is a poorly known dipsadid snake endemic to elevated areas in the Atlantic Forest of southeastern Brazil. After the examination of specimens deposited in scientific collections, we update the distribution range of *M. montana* with five new locality records, including its first record from the state of Rio de Janeiro, and a new northernmost and easternmost record in the state of Minas Gerais. These new data reinforce the distribution of *M. montana* within the mountain ranges of Serra da Mantiqueira and Serra do Mar, from 750–1,610 m above sea level.

Key words: Atlantic Forest; biogeography; Serra da Mantiqueira; Serra do Mar; snakes

The snake *Mussurana montana* (Franco, Marques & Puorto, 1997) is endemic to the Brazilian southeastern Atlantic Forest. Currently, its conservation status is classified as "Near Threatened" at the national level (Martins 2005), and as "Vulnerable" and "Near Threatened" in the states of São Paulo and Minas Gerais (Biodiversitas 2007; Marques et al. 2009), where the species is known to occur (Franco et al. 1997; Hartmann et al. 2009).

Mussurana montana can be diagnosed by the presence of 19 dorsal scale rows at midbody, eight supralabials (fourth and fifth contacting the eye), eight infralabials, 201–218 ventrals, 46–57 paired subcaudals; juveniles red dorsally, with a dark brown longitudinal vertebral stripe, and a light nuchal collar, while adults become dark brown dorsally and cream colored ventrally (Franco et al. 1997). Up to now *Mussurana montana* was recorded to high elevation areas (750–1,550 m above sea level [a.s.l.]) of two mountain ranges of Paleocene origin (Almeida and Carneiro 1998) in southeastern Brazil: Serra da Mantiqueira and Serra do Mar (Franco et al. 1997; Hartmann et al. 2009). Within Serra da Mantiqueira, *M. montana* was recorded from seasonal semidecidual forests in Serra do Cervo, municipality of Poços de Caldas (21.7833° S, 46.5667° W), southeastwards in dense ombrophilous forests and ecotones with mixed ombrophilous forests in the municipalities of Camanducaia (22.8333° S, 46.1000° W), Sapucaí-Mirim (22.7500° S, 45.7500° W), Campos do Jordão (22.7395° S, 45.5914° W), and Guaratinguetá (22.6647° S, 45.3097° W, type locality) (Franco et al. 1997). Within Serra do Mar, the species was recorded from dense ombrophilous forests of the Serra da Bocaina, in Parque Estadual da Serra do Mar (Hartmann et al. 2009). Here, we add five new locality records for *M. montana* in southeastern Brazil, including the first record for the state of Rio de Janeiro and a new northernmost and easternmost record in the state of Minas Gerais.

New records from dense ombrophilous forests of Serra do Mar are based on specimens deposited in the Museu de Zoologia Dr. Adão José Cardoso, Universidade Estadual de Campinas (ZUEC), and Departamento de Zoologia da Universidade Federal do Rio de Janeiro (ZUFRJ): ZUEC-1430 from the municipality of Cunha (23.0750° S, 44.9583° W), in Serra da Bocaina, state of São Paulo; and ZUFRJ-1764 from Serra das Araras, municipality of Petrópolis (22.3833° S, 43.1833° W), first species record from the state of Rio de Janeiro.

New records from seasonal semidecidual forests of Serra da Mantiqueira are based on specimens from the state of Minas Gerais, deposited in Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Universidade Federal de Juiz de Fora (UFJF), and in the

Universidade Federal de Minas Gerais (UFMG): MNRJ-7834 from Reserva Particular do Patrimônio Natural (RPPN) Retiro Branco (21.7917° S, 46.5083° W), municipality of Poços de Caldas; UFJF-05 from Parque Estadual do Ibitipoca (21.7000° S, 43.8833° W), municipality of Lima Duarte; and UFMG-2073 (Figure 1) from RPPN Mata do Sossego (20.0700° S, 42.0761° W), municipality of Simonésia, new northernmost and easternmost record.

Figure 1. Live juvenile specimen of *Mussurana montana* (UFMG-2073), collected by PSS and WPL (collection permit SISBIO 25082-1) in *RPPN Mata do Sossego*, municipality of Simonésia, state of Minas Gerais, southeastern Brazil, new northernmost and easternmost record for this species.

Our findings greatly increase the extent of occurrence of *Mussurana montana* (Figure 2), add three new protected areas to the species range (RPPN Retiro Branco, Parque Estadual do Ibitipoca and RPPN Mata do Sossego), and reinforce its distribution pattern restricted to Serra do Mar and Serra da Mantiqueira, between 750–1,610 m a.s.l (mean elevation 1,230 m). Besides, it highlights distribution gaps that could suggest the occurrence of *M. montana* in another mountain ranges, like Serra dos Órgãos (the easternmost region of Serra do Mar, in Rio de Janeiro), Serra do Brigadeiro and Serra do Caparaó (both close to Simonésia, and the northernmost regions of Serra da Mantiqueira). All these areas were already the focus of herpetofaunal surveys (Valdujo et al. 2006; Levandeira-Gonçalves et al. 2007; Moura et al. 2012), but the absence of records of *M. montana* could be due to insufficient snake sampling or even a reflection of the species possible natural rarity.

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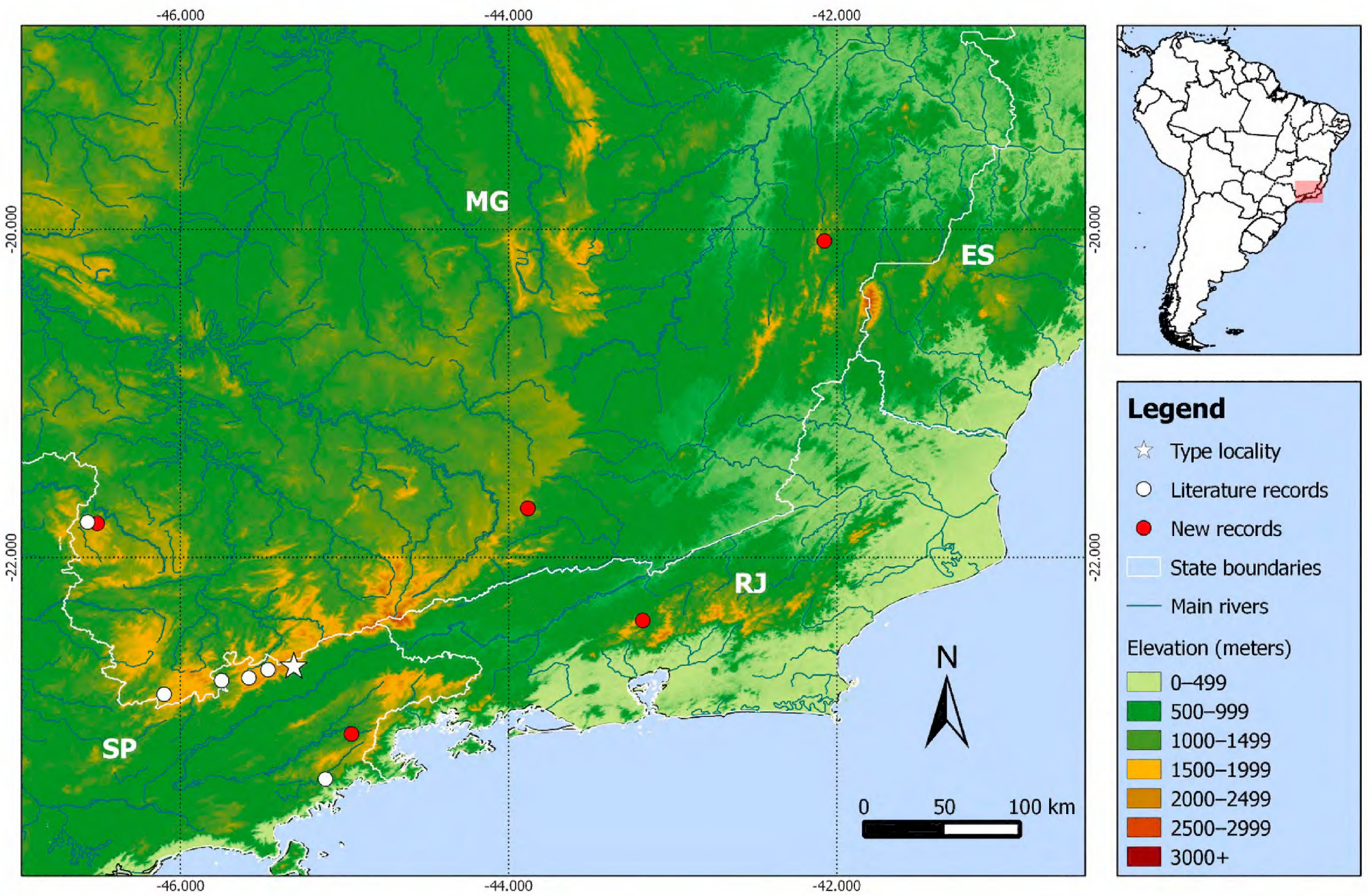

Figure 2. Geographic distribution map of *Mussurana montana*. See Table 1 for locality details. State acronyms: ES = Espírito Santo; MG = Minas Gerais; RJ = Rio de Janeiro; SP = São Paulo.

Table 1. Locality records of *Mussurana montana*. MG = Minas Gerais; RJ = Rio de Janeiro; SP = São Paulo. Collection acronyms: MNRJ = Museu Nacional, Universidade Federal do Rio de Janeiro; UFJF = Universidade Federal de Juiz de Fora; UFMG = Universidade Federal de Minas Gerais; ZUEC = Museu de Zoologia Dr. Adão José Cardoso, Universidade Estadual de Campinas; ZUFRJ = Departamento de Zoologia da Universidade Federal do Rio de Janeiro.

State	Municipality, Locality	Latitude	Longitude	Elevation (m)	Source
MG	Camanducaia, Fazenda Levantina	-22.8333	-46.1000	1,350	Franco et al. 1997
MG	Lima Duarte, Parque Estadual do Ibitipoca	-21.7000	-43.8833	1,600	UFJF 05
MG	Poços de Caldas	-21.7833	-46.5667	1,200	Franco et al. 1997
MG	Poços de Caldas, RPPN Retiro Branco	-21.7917	-46.5083	1,370	MNRJ 7834
MG	Sapucaí-Mirim	-22.7500	-45.7500	900	Marques et al. 2004
MG	Simonésia, RPPN Mata do Sossego	-20.0700	-42.0761	1,300	UFMG 2073
RJ	Petrópolis, Serra das Araras	-22.3833	-43.1833	1,200	ZUFRJ 1764
SP	Campos do Jordão	-22.7333	-45.5833	1,610	Franco et al. 1997
SP	Campos do Jordão, Parque Estadual Campos do Jordão	-22.6833	-45.4667	1,550	ZUEC 1379, 1387, 1480, 1501; Marques et al. 2004
SP	Cunha	-23.0750	-44.9583	940	ZUEC 1430
SP	Guaratinguetá, rio Piagüi, UHE Sodré (type locality)	-22.6647	-45.3097	750	Franco et al. 1997
SP	São Luís do Paraitinga, Núcleo Santa Virgínia, Parque Estadual Serra do Mar	-23.3500	-45.1167	1,000	Hartmann et al.2009

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